

Great Basin National Park

Mt. Washington bristlecone pine



Pinus longaeva, the world's longest living tree, has been known to live for over 4,900 years. It usually grows at elevations between 9,000 and 11,500 feet on exposed rocky sites above the continuous forest. It is usually found on limestone or dolomite but, as is the case on Wheeler Peak, will grow on quartzite or volcanic rock. Wind and snow at higher elevations cause the crown to become bushy and distorted. Windblown sand and ice crystals polish the trunk, often wearing away sections of the tree. Bristlecones survive longest where conditions are most strenuous. They are slow growing and easily out-competed by faster growing trees so they have adapted to the harshest conditions where other trees will not grow. A 4,900+ year old tree was removed from the Wheeler Peak grove in 1964.

Bristlecone pine wood that has fallen to the ground can remain intact for thousands of years in a cold and dry climate. Using a cross-dating technique that overlaps tree-ring patterns of living trees with the still intact growth patterns of dead wood, scientists have assembled a continuous tree-ring chronology extending nearly 10,000 years. For many years now, scientists, archeologists, and historians have relied on a dating system known as radiocarbon dating. It was discovered back in the 1960s that this process was flawed and needed to be calibrated. The wood from bristlecone pines helped correct this process by providing samples that could be precisely dated. Scientists dated these samples by counting their growth rings; they then measured the amount of carbon-14 (C^{14}) in those same samples. They discovered that the radiocarbon dating process was providing dates that were "too young" and established a calibration factor to correct the dating process. Faulty C^{14} data obtained before the bristlecone pine calibration was then re-examined and corrected. Because bristlecone pines provided the wood to recalibrate the radiocarbon dating method, they have become known as the trees that rewrote history.

For more information on the Great Basin National Park please visit:

<http://www.nps.gov/grba/index.htm>

